

SOUTH CENTRAL LOUISIANA TECHNICAL COLLEGE

INVITATION TO BID

WELDING FUME EXTRACTION SYSTEM

FOR

SCLTC- LAFOURCHE CAMPUS

1425 Tiger Drive

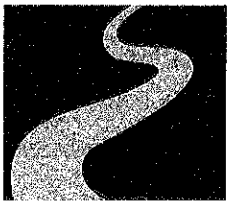
Thibodaux, LA 70301

MANDATORY JOB SITE VISIT REQUIRED

Solicitation Number: 40018-1709LAF

Bid Opening Date: November 9, 2016

Bid Opening Time: 2:00 P.M. (CST)



SCL
TECHNICAL
COLLEGE

ADMINISTRATIVE OFFICE

Earl W. Meador, J.D., Director

900 Youngs Road
P.O. Drawer 2148
Morgan City, LA 70381
Phone (985) 380-2957
Fax (985) 380-2440

Instructions to bidders:

1. Read the entire bid, including all terms and conditions and specifications.
2. All bid prices must be typed or written in ink. Any corrections, erasures or other forms of alteration to unit prices should be initialed by the bidder.
3. This bid is to be manually signed in ink.
4. Bid prices shall include delivery of all items f.o.b. destination or as otherwise provided. Bids containing "payment in advance" or "C.O.D." requirements may be rejected. Payment is to be made within 30 days after receipt of properly executed invoice or delivery, whichever is later.
5. Desired delivery: addressed in the special terms and conditions section
6. To assure consideration of your bid, all bids and addenda should be returned in an envelope or package clearly marked with the bid opening date and the bid number, or submitted in the special envelope if furnished for that purpose.
7. Bids submitted are subject to provisions of the laws of the state of Louisiana including but not limited to L.R.S. 39:1551-1736; purchasing rules and regulations; executive orders; standard terms and conditions; special conditions; and specifications listed in this solicitation.
8. Important: by signing the bid, the bidder certifies compliance with all instructions to bidders, terms, conditions and specifications, and further certifies that this bid is made without collusion or fraud. This bid is to be manually signed in ink by a person authorized to bind the vendor. All bid information shall be with ink or typewritten.
9. Address all inquiries and correspondence to the buyer at the phone and address shown above.
10. Please complete the UNIT PRICE and AMOUNT column on the bid form and provide a TOTAL amount of the bid at the bottom of the solicitation.

Young Memorial Campus – Morgan City
Reserve Campus – Reserve
Lafourche Campus – Thibodaux

Member of the Louisiana Community and Technical College System



ACCREDITED BY THE COUNCIL ON OCCUPATIONAL EDUCATION ♦ AN EQUAL OPPORTUNITY EMPLOYER

www.scl.edu

South Central Louisiana Technical College

INFORMATION FOR BIDDERS AND STANDARD CONDITIONS

- 1) **Bid Forms:** All written bids, unless otherwise provided for, must be submitted on, in accordance with, forms provided, properly signed in ink by an authorized representative of the bidding entity. Please use blue ink when signing bid documents. Bid prices shall be typewritten or in ink. Bids submitted in the following manner will not be accepted: (1) bid contains no signature indicating intent to be bound; (2) bid filled out in pencil; (3) photocopy of bidder's signature; and (4) bid sent by facsimile equipment. Price alterations to bid responses received before bid opening time will be considered provided the written price alteration had been received and time-stamped before bid opening time. Any other alterations of the bid response form or foreign conditions attached thereto may cause rejection of the bid response without further consideration.
- 2) **Sealed Envelope:** To assure consideration, all bids must be submitted in a sealed envelope. The envelope must contain THE BID NUMBER, THE CONTRACTOR'S LICENSE NUMBER (IF REQUIRED), THE DUE DATE AND TIME, AND THE NAME OF THE BIDDER.
- 3) **Standard of Quality:** Any product or service bid, shall conform to all applicable federal and state laws and regulations and the specifications contained in the solicitation, unless otherwise specified in the solicitation, and manufacturer's name, trade name, brand name, or catalog number used in the specification is for the purpose of describing the standard of quality, performance, and characteristics desired and is not intended to limit or restrict competition. Bidder must specify the brand and model number of the product offered in his bid. Bids not specifying brand and model number shall be considered as offering the exact products specified in the solicitation.
- 4) **Descriptive Information:** Bidders proposing an equivalent brand or model should submit with the bid response, information (such as illustrations, descriptive literature, and technical data) sufficient for the College to evaluate quality, suitability, and rejected. Any change made to a manufacturer's published specification submitted for a product shall be verifiable by the manufacturer. If item(s) bid does not comply with specifications (including brand and/or product number), bidder should state in what respect the item(s) deviate. Failure to note exceptions on the response form will not relieve the successful bidder(s) from supplying the actual products requested.
- 5) **Bid Opening:** Bidders may attend the bid opening, but no information or opinions concerning the ultimate contract award will be given at the bid opening or during the evaluation process. Bids may be examined 72 hours after request is made. Information pertaining to completed files may be secured by visiting SCLTC Purchasing Department during normal working hours. Written bid tabulations will not be furnished.

6) **Louisiana Preference:** Preference is hereby given to products produced, manufactured, harvested, grown or assembled outside of Louisiana. The bidder shall state his right to claim the ten percent (10%) preference in his bid response on the form provided and the bidder shall state the respective Louisiana location where each qualifying item is produced, manufactured, harvested, grown or assembled.

7) **Signature Authority:** **ATTENTION: .R.S. 39:1594(C)(4) requires evidence of authority to sign and submit bids to the State of Louisiana. You should indicate which of the following apply to the signer of this bid.**

1. The signer of the bid is either a Corporate Officer who is listed on the most current annual report on file with the Secretary of State or a member of a partnership or partnership in Commendam as reflected in the most current Partnership Records on file with the Secretary of State. A copy of the Annual Report or Partnership Record must be submitted to this office before contract award.
2. The signer of the bid is a representative of the Bidder Authorized to submit this bid as evidenced by documents such as, Corporate Resolution, Certification as to Corporate Principal, etc. If this applies, a copy of the Resolution, Certification, or other supportive documents must be attached hereto.
3. The bidder has filed with the Secretary of State an Affidavit or Resolution or other acknowledged/authentic document indicating that the signer is authorized to submit bids for public contracts. A copy of the applicable document must be submitted to this office before contract award.
4. An individual listed on the State of Louisiana Bidder's Application as authorized to execute bids.

By signing the bid, the bidder certifies compliance with the above.

8) In accordance with the provisions of R.S. 39:2182, in awarding contracts after August 15, 2010, any public entity is authorized to reject a proposal or bid from, or not award the contract to, a business in which any individual with an ownership interest of five percent or more, has been convicted of, or has entered a plea of guilty of "nolo contendere" to any state felony or equivalent federal felony crime committed in the solicitation or execution of a contract or bid awarded under laws governing public contracts under the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950, Professional, Personal, Consulting, and Social Services procurement under the provisions of Chapter 16 of Title 39, or the Louisiana Procurement Code under the provisions of Chapter 17 of Title 39.

9) **Addendums:** If an addendum is issued regarding the bid solicitation, it is the responsibility of the bidder, prior to submitting their bid, to periodically visit if any addendums were issued and posted to the State of Louisiana Purchasing Department LaPAC website.

- 10) **Prices:** Unless otherwise specified by the university in the solicitation, bid prices must be complete, including transportation prepaid by bidder to destination and firm for acceptance for a minimum of 30 days. If accepted, prices must be firm for the contractual period. Bids other than F.O.B. destination may be rejected. Prices should be quoted in the unit (each, box, case, etc.) as specified in the solicitation. Failure to do so may result in your bid being rejected.
- 11) **Payment Terms:** Cash discounts for less than 30 days may be offered, but will not be considered in determining awards. Bids containing "payment in advance" or "COD" requirements may be rejected. Payment is to be made within 30 days after receipt of properly executed invoice or delivery, whichever is later.
- 12) **Deliveries:** Bids may be rejected if the delivery time indicated is longer than that specified in the solicitation.
- 13) **Taxes:** Bidder is responsible for including all applicable taxes in the bid price. South Central Louisiana Technical College is currently exempt from Louisiana State Sales and Use Taxes, and local parish and city taxes.
- 14) **New Products:** Unless specifically called for in the solicitation, all products for purchase must be new, never previously used, and the current model and/or packaging. No remanufactured, demonstrator, used or irregular product will be considered for purchase unless otherwise specified in the solicitation. The manufacturer's standard warranty will apply unless otherwise specified in the solicitation.
- 15) **Default of Contractor:** Failure of a contractor to deliver within the time specified, or failure to make replacements of rejected articles, shall permit the University to purchase in the open market articles of comparable grade to take the place of those rejected or not delivered. On all such purchases the contractor shall reimburse the University for any expense incurred in excess of contract prices. Such purchases will be deducted from contract quantities.
- 16) **Contract Cancellation:** The University of Louisiana at Monroe has the right to cancel any contract, in accordance with Purchasing Rules and Regulations, for cause, including but not limited to, the following: (1) Failure to deliver within the time specified in the contract; (2) Failure of the product or service to meet specifications, conform to sample quality or to be delivered in good condition; (3) Misrepresentation by the contractor; (4) Fraud, collusion, conspiracy or other unlawful means of obtaining any contract with the state; (5) conflict of contract provisions with constitutional or statutory provisions of state or federal law; (6) any other breach of contract.
- 17) **Applicable Law:** All contracts shall be construed in accordance with and governed by the Laws of the State of Louisiana.

18) COMPLIANCE WITH CIVIL RIGHT LAWS: By submitting and signing this bid, bidder agrees to abide by the requirements of the following as applicable: Title VI and VII of the Civil Rights Act of 1964, as amended by the Equal Opportunity Act of 1972, Federal Executive Order 11246, Federal Rehabilitation Act of 1973, as amended, the Veteran's Readjustment Assistance Act of 1974, Title IX of the Education Amendments of 1972, the Age Act of 1975, and bidder agrees to abide by the requirements of the Americans with Disabilities Act of 1990. Bidder agrees not to discriminate in its employment practices, and will render services under any contract entered into as a result of this solicitation without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, veteran status, political affiliation, or disabilities. Any act of discrimination committed by bidder, or failure to comply with these statutory obligations when applicable, shall be grounds for termination of any contract entered into as a result of this solicitation.

19) SPECIAL ACCOMMODATION: Any "Qualified individual with a Disability" as defined by the American with Disabilities Act who has submitted a bid and desires to attend the bid opening, must notify this office in writing not later than seven days prior to the bid opening date of their need for special accommodations. If the request cannot be reasonably provided, the individual will be informed prior to the bid opening.

20) INDEMNITY: Contractor agrees, upon receipt of written notice of a claim or action, to defend the claim or action, or take other appropriate measure, to indemnify, and hold harmless, the state, its officers, its agents and its employees from and against all claims and actions for bodily injury, death or property damages caused by the fault of the contractor, its officers, its agents, or its employees. Contractor is obligated to indemnify only to the extent of the fault of the contractor, its officers, its agents, or its employees. However, the contractor shall have no obligation as set forth above with respect to any claim or action from bodily injury, death or property damages arising out of the fault of the state, its officers, its agents or its employees.

21) CERTIFICATION OF NO SUSPENSION OR DEBARMENT: By signing and submitting any bid for \$25,000 or more, the bidder certifies that their company, any subcontractors, or principals are not suspended or debarred by the General Services Administration (GSA), in accordance with the requirements in OMB Circular A-133. A list of parties who have been suspended or debarred can be viewed via the internet at <http://www.EPLS.gov>.

22) FEDERAL CLAUSES, IF APPLICABLE: ANTI-KICKBACK CLAUSE- The contractor hereby agrees to adhere to the mandate dictated by the Copeland "Anti-Kickback" Act which provides that each contractor or subgrantee shall be prohibited from inducing, by any means, any person employed in the completion of work, to give up any part of the compensation to which he is otherwise entitled.

CLEAN AIR ACT- The contractor hereby agrees to adhere to the provisions which require compliance with all applicable standards, orders or requirements issued under Section 306 of the Clean Air Act which prohibits the use under non-exempt Federal Contracts, Grants or Loans of Facilities included on the EPA list of Violating Facilities.

ENERGY POLICY AND CONSERVATION ACT- The contractor hereby recognizes the mandatory standards and policies relating to energy efficiency which are contained in the State Energy Conservation Plan issued in compliance with the Energy Policy and Conservation Act (P.L. 94-163).

CLEAN WATER ACT- The contractor hereby agrees to adhere to the provisions which require compliance with all applicable standards, orders or requirements issued under Section 508 of the Clean Water Act which prohibits the use under non-exempt Federal Contracts, Grants or Loans of Facilities included on the EPA list of Violating Facilities.

ANTI-LOBBYING AND DEBARMENT ACT- The contractor will be expected to comply with Federal Statutes required in the Anti-Lobbying Act and the Debarment Act.

South Central Louisiana Technical College

INSURANCE REQUIREMENTS FOR CONTRACTORS

The contractor shall purchase and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the contractor, its agents, representatives, employees or subcontractors.

A. MINIMUM SCOPE AND LIMITS OF INSURANCE

- 1) **WORKERS COMPENSATION:** Workers compensation insurance shall be in compliance with the workers compensation law of the state of the contractor's headquarters. Employers liability is included with a minimum limit of \$1,000,000 per accident/per disease/per employee. If work is to be performed over water and involves maritime exposure, applicable LHWCA, Jones Act, or other maritime law coverage shall be included. A.M. best's insurance company rating requirement may be waived for workers compensation coverage only.
- 2) **COMMERCIAL GENERAL LIABILITY:** Commercial general liability insurance, including personal and advertising injury liability and products and completed operations, shall have a minimum limit per occurrence of \$1,000,000 and a minimum general annual aggregate of \$2,000,000. The insurance services office (ISO) commercial general liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.
- 3) **AUTOMOBILE LIABILITY:** Automobile liability insurance shall have a minimum combined single limit per accident of \$1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned automobiles.

**NOTICE TO VENDORS
THIS IS NOT AN ORDER.
IT IS MERELY
A REQUEST FOR PRICES**

**STATE OF LOUISIANA
REQUEST FOR QUOTATION

LCTCS
SCLTC, Lafourche Campus**

DATE

10/6/16

Date and time by which
quotation must be
returned:

**11/9/16
2:00 PM**

TO THE VENDOR:

To be returned on or before date
specified above to:

**South Central Louisiana Technical
College- Young Memorial Campus
900 Youngs Road
P. O. Drawer 2148
Morgan City, LA 70381
(985)380-2957 Ext. 309
(985)380-2440 FAX**

Bid # 1709LAF

NAME AND ADDRESS OF VENDOR (FIRM OR INDIVIDUAL)

| ITEM NO. | QUANTITY | UNIT OF MEASURE | COMMODITY | REMARKS BY VENDOR | UNIT PRICE | AMOUNT |
|----------|----------|-----------------|---|-------------------|--------------|--------|
| 1 | 1 | Job | Bid must include fume extraction system in welding training facility for 34 (thirty-four) welding booths located at SCLTC-Lafourche Campus, 1425 Tiger Drive, Thibodaux, LA 70301. Base Bid (18 booths) Alternate Bid (Additional 16 booths) | | | |
| | | TOTAL | All costs incurred for installation and manufacturing of fume extraction system for 34 (thirty-four) welding booths. See attached specifications BID PRICE MUST INCLUDE ANY DELIVERY/FUEL CHARGES. All bids submitted must include equipment spec sheets. Mandatory job site visit is required and contractor must verify all measurements. The contractor is responsible for all permits, fees and must comply with all state, federal, and local requirements. Contractor must coordinate schedule of scope of work so that disruption of student services is minimal. -MUST PROVIDE CONTRACTOR'S LICENSE -MUST PROVIDE CERTIFICATE OF INSURANCE ANY QUESTIONS REGARDING SPECIFICATIONS PLEASE CONTACT ANTHONY BAHAM AT (985) 380-2957 EXT. 310. SCLTC- LAFOURCHE IS A STATE AGENCY AND TAX EXEMPT | | | |
| | | | NOTICE: We have no facilities for furnishing abstract of bids; a complete record of all bids is kept on file in this office subject to the inspection of any citizen. Every courtesy will be afforded to any citizen who is interested in investigation for any purpose the record of State Purchases. | | TOTAL | |

TO THE VENDOR:

ADVISE DELIVERY ON ABOVE AS
FOLLOWS:

**BID MUST BE SIGNED IN
ORDER TO BE
CONSIDERED.**

DATE DELIVERY REQUIRED

1/13/17

TRANSPORTATION CHARGES MUST BE INCLUDED IN YOUR PRICES
QUOTED ABOVE PAID TO:

AGENCY-LAFOURCHE CAMPUS

THE TERMS ARE:

NET30 DAYS

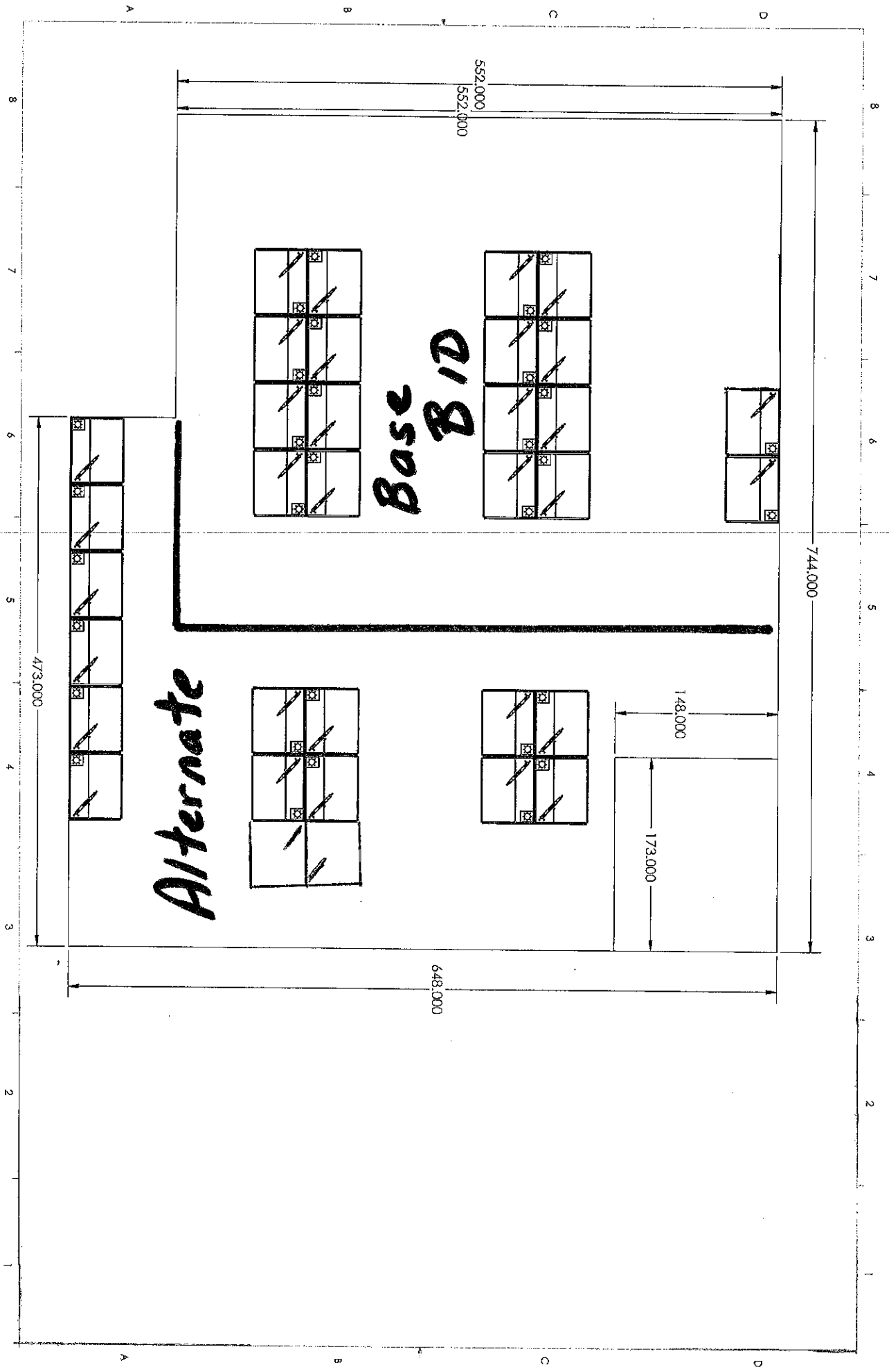
THIS QUOTE IS SUBMITTED BY

NAME OF VENDOR
(FIRM OR INDIVIDUAL) _____

SIGNATURE _____

TITLE _____

DATE SUBMITTED _____



WELDING FUME EXTRACTION SYSTEM

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Conditions of the Contract and portions of Division One of this Project Manual apply to the Section as though repeated herein.

1.02 SUMMARY

- A. Section includes system components and installation description for a specialized Welding Fume Extraction System
- B. The bidder shall provide all labor, materials, and equipment necessary to put in a complete turnkey system to remove welding fumes, gases and particulate. All necessary controls, motors, fittings, ductwork, blower(s), labor and all other equipment and materials specified shall be part of the bidders work.
- C. System shall be complete "design/build" system, certified and stamped by contractor's Licensed Mechanical Engineer.

1.03 SYSTEM DESCRIPTION

- A. Training Booth fume extraction Arms, telescoping.
- B. Training area fume extraction Arms, articulating.
- C. Centralized industrial round pre-engineered and certified duct system.
- D. Centralized fume extraction sound enclosed centrifugal blower.
- E. Mounting hardware and supports.

1.04 SUBMITTALS

- A. Product Data: Indicate manufacturer's model number, technical data, accessories, requirements for access, maintenance, weights and service-connections including dimensions shall be submitted to the Architect.
- B. Contractor to provide layout drawings showing field locations of all components, duct diameters and hanger details. Drawings shall be certified by contractor's licensed mechanical engineer and stamped certifying that the system is designed and installed to protect the owner and personnel from the exposure to the hazardous carcinogens expelled by the process.
- C. Closeout Submittals: Operation and Maintenance data manuals including spare parts lists shall be provided to the owner.

1.05 QUALITY ASSURANCE

- A. All items of equipment and materials described in these specifications are to be furnished installed and placed into proper operating condition in accordance with good practice and manufacturer's written or published instructions.
- B. The bidder shall submit in writing, 10 days prior to bid opening date, a request for prior approval to bid any product that is not specifically mentioned in the following specifications. Failure to submit a request for prior approval within the time frame stated, and receive approval to bid such items, will be cause for rejection of the bidder's proposal.

- C. The bidder is required to make a pre-bid jobsite inspection prior to bid date, and shall acknowledge all jobsite conditions by furnishing, **along with their bid**, CAD drawings of each jobsite, detailing the intended installation. Because this project is a design/build type project, **each drawing shall be certified and stamped by a state Licensed Mechanical Engineer of the state in which the project is installed**, and this stamp shall be on the CAD drawings, to insure that a licensed and insured professional certifies that **the system proposed will protect the owner and personnel from the exposure to the hazardous carcinogens expelled by the process.**
- D. At the discretion of the owner, the bidder shall provide 100% performance and payment bond within 10 days of award of contract.
- E. All workmanship and materials shall be in accordance with applicable codes and regulations. The following codes and regulations are to be considered part of these specifications;
- Underwriters Laboratory (UL) (CUL)
 - National Fire Protection Agency (NFPA)
 - National Electric Code (NEC)
 - Air Movement and Control Association (AMCA)
 - International Mechanical Code (IMC)
 - Building Officials and Code Administrators (BOCA)
 - Uniform Mechanical Code (UMC)
 - Southern Building Code Congress International (SBCCI)
 - American National Standards Institute (ANSI)
 - American Society of Mechanical Engineers (ASME)
 - State and Local City Codes
 - Sheet Metal and Air Conditioning Contractors of North America (SMACNA)
 - International Organization for Standardization (ISO)
 - American Conference of Governmental Industrial Hygienists (ACGIH)

1.06 DELIVERY, STORAGE AND HANDLING

- A. Packing, shipping, handling and unloading: Deliver the system components as factory assembled units protective crating and covering, as feasible for transportation. Store equipment in original protective crating and covering in a dry location.

1.07 PROJECT/SITE CONDITIONS

- A. Existing Conditions: Verify dimensions and installation areas by field measurements. Contractor is responsible for the fit of all new equipment in the existing conditions.

1.08 COORDINATION

- A. Coordinate layout and installation with other work, including light fixtures, HVAC equipment, and fire-suppression system components.
- B. Coordinate location and requirements of service-utility connections.
- C. Contractor shall be responsible for relocation of any existing obstructions that is deemed in the way of the pre-engineered extraction system components.

PART 2: PRODUCTS

2.01 SYSTEM EQUIPMENT COMPONENTS

- A. Furnish and install a complete design/build, turnkey fume capture system with the following components:

1. **Training Booth fume extraction Arm:** The Lincoln model LTA-2.0, or equal, telescoping extraction arm shall be eight inches in diameter (minimum diameter) and designed to provide 750 CFM with a pressure loss no greater than 5.0 wg. The arm shall be telescoping in nature and provide a range of 40 inches in its compact state and 55 inches fully extended. **Smaller diameter arms are not acceptable** due to the increased noise generated from the higher internal arm and duct velocities generated, thus increasing the environmental noise level and reducing the capability of communication within the environment.

The arm shall have an elliptical style hood with a 360 degree rotation capability for ease of use and positioning. The hood opening will be elliptical in shape allowing for positioning of the hood behind the weld object while occupying minimal table space. The opening shall be equivalent of 108 square inches to provide adequate capture velocities with straightening vanes in the face of the hood. Target plates or flat discs in the face of the hood are not acceptable due to increased noise generation.

The mounting bracket supporting the arm shall not extend beyond 9" to reduce extending the arm into the student's work space. Mounting bracket shall have the model and serial number listed on the plate for easy reference. The construction of the arm and hood shall be polypropylene copolymer with UV stabilization to withstand maximum continuous operating temperatures of 176 F. The arm shall be capable of maintaining its position through adjustable friction joints internally located to preventing students from easy access. The use of counter weights or balancers external to the arm will not be permitted to avoid students' interaction with arms components other than simple use.

Telescoping arm internal construction shall be of a lightweight aluminum internal skeleton with three adjustable internal friction joints for arm positioning adjustment in all directions. The arm and hood shall be dent and scratch resistant. The flexible hose shall be PVC coated.

The hood shall have incorporated in the design a throttle valve for completely closing off air flow. An optional 35W halogen lit kit for added illumination in the welding booth (when indicated on the plan) shall be provided.

If current fume extraction arm brackets are not used, contractor must remove them from existing welding booths.

2. **Training Area fume extraction articulating Arms:** The Lincoln model LFA 3.1, or equal, flexible extraction arm shall be eight inches in diameter and designed to provide 750 CFM total with a pressure loss no greater than 5" wg. The arm shall be articulated in nature and provide a range of 10 feet.

The LFA 3.1, 10 ft. (3.0 m) flexible fume extraction arm shall be provided with a wall mounting bracket, base swivel mount, lightweight aluminum internal skeleton, internal spring balance system, internal friction lock system, dent and scratch resistant outer arm tube with reinforced flexible hose and 360 degree rotatable hood.

The wall mounting brackets shall be "L" shaped and extend from the wall surface by 15 in. Each wall mounting bracket shall be provided with four 3/8 in. mounting bolt holes. The wall mounting brackets shall support the 180 degree base swivel mount with a hanging post. The base swivel mount shall include clamping pin, red plastic ring and 8 in. rubber seal. The base swivel mount will be the pivoting connection for the lightweight aluminum internal skeleton of the flexible fume extraction arm.

The lightweight aluminum internal skeleton shall consist of a spring bracket, flexible hose and friction lock system. The aluminum internal skeleton will consist of a tube spacer for mounting of 2.5 ft. outer arm plastic tube section, inner tube hood side with hood hinge and a rubber connection cover. The internal spring balance system will consist of a threaded rod with tee connection, an arm spring on the fan side and spring hook to mount spring to internal skeleton.

The dent and scratch resistant outer arm tube section shall be 2.5 ft. long, 7.87 in. (200 mm) diameter dent and consist of high temperature synthetic material. The outer arm section shall consist of the color red and include three 8 inch rubber seals. The outer arm section shall be connected to one 4 ft. long, 8 in. diameter flexible hose. A second 1 ft. long, 8 in. diameter flexible hose connected to the outer arm section and 360 degree rotatable hood. The flexible hose will be flame resistant double wall, neoprene coated, woven polyamide with and internal steel helix.

The 360 degree rotatable hood is a synthetic dent resistant housing which will consist of a grid focus vane to prevent debris from entering the arm. It will have a specific spoon shape for greatest capture efficiency and will have an opening of 9" x 12" oval diameter. The rotatable hood will also be equipped with a throttle valve to control airflow. The rotatable hood can also be retrofitted with an optional low voltage (35W) halogen light kit (when indicated on the plans).

3. **Centralized industrial round pre-engineered and certified duct system:** The ductwork system shall be galvanized steel, spiral or welded long seam, constructed to meet the standards of SMACNA Industrial Round Ductwork, Class 2 construction, as a minimum standard.

Minimum gauges for spiral duct are:

- 22 gauge on 8" thru 14" diameters
- 20 gauge on 16" thru 17" diameters
- 18 gauge on 18" thru 22" diameters
- 18 gauge flanged on 24" thru 30" diameters

Welded long seam ducts shall increase the gauge thickness by two gauges above the spiral gauges listed above.

Ductwork fittings shall be at maximum 45 degree branch lateral entries running parallel with the floor (no bottom of duct entries), elbows shall be 1.5 times duct diameter centerline radius. (Only in extreme cases of a tight fit, 45 degree "boot tees" may be used for branch entries, but in no case shall a "straight tee" be allowed.) All joints shall be positively sealed with double EPDM rubber gaskets for slip fit connections, and silicone sealant on the face of all flanged connections. External "paint on" duct sealant, hard cast tape, or "duct tape" is not acceptable.

All fittings shall be joined with a minimum of (4) #8 x 3/4" sheet metal screw or by pop rivet. Quantity of fasteners shall be as required in the current SMACNA standard for industrial round ductwork. Hangers shall be two point connections on each side of the duct, by minimum 3/8" diameter all-thread rod to full wrap saddles. Hangers shall be attached to the building structure with beam clamp, uni-strut, or "Sammie" fasteners. **Duct shall not**

be hung by "hanger strap" or cables. Hangers shall be designed to withstand a 250 lb. maintenance load and 100 lb. per cubic foot material transported thru the duct system, as per SMACNA standard for Industrial Round Ductwork.

Ductwork shall be engineered to maintain a maximum 2500 FPM to a minimum of 2000 FPM velocities in the ducts to convey the welding fumes as captured by the fume extraction arms.

Duct system shall be engineered for a balanced system following the engineering principles of the Industrial Ventilation Guide published by ACGIH. If awarded the bid, the bidder is responsible for providing a full CAD drawing with double line ductwork layout. The design and drawing shall **be certified and stamped by a Licensed Mechanical Engineer** (*licensed to practice in the state the project is installed*), and this stamp shall be on the CAD drawings, to insure that a licensed and insured professional certifies that the system proposed will protect the owner and personnel from the exposure to the hazardous carcinogens expelled by the process.

4. **Centralized fume extraction centrifugal blower:** The Lincoln model SF, or equal, fan(s) shall be a fan and motor unit specifically designed for extracting harmful fumes and gases which are released during the most common welding processes.

The central fan unit shall be constructed of a 160M direct-drive fan blade which eliminates the use of belts and sheaves, AMCA arrangement #4. The fan housing shall have an access door for clean-out and fan blade maintenance, and shall include a drain connection on the bottom of the fan scroll. The electric motor and fan housing shall be supported by rubber-in-shear or spring isolators to reduce system vibration and noise.

The fan shall include air inlet flexible couplers between the fan and ductwork to allow for vibration and movement.

The central fan unit shall have a maximum fan rotation of 3,521 RPM and a high efficiency VFD compatible, TEFC, electric drive motor. The fan unit shall be mounted either on a factory provided frame with four adjustable feet to accommodate floor irregularities and which keeps the fan motor a minimum of 36 inches above the mounting surface. Fans designed with a lower base shall be required to provide stands to meet the minimum mounting height of the electric motor, or shall be set on roof mounted equipment supports, as the job requirements dictate.

Fans shall be sound rated per AMCA and shall include a factory furnished motor starter, or VFD, with properly sized overloads to meet the HP requirement. The starter shall include a dead front disconnect switch with locking feature, enclosed in a NEMA 4 enclosure.

When indicated on the plans, the fan shall include a straight discharge air silencer to reduce the noise level by 27 dbA, and a 90 degree silencing discharge elbow that reduces the sound level by an additional 22 dbA.

5. **Variable Frequency Inverter Drive:** Fan shall be controlled by a variable frequency drive to provide soft-start and control of the fan speed to match the system varying conditions. A system pressure measuring pressure transducer shall be installed on the inlet duct of the fan, 5 duct diameters from any elbow. Pressure transducer shall provide 4-20mA signal feedback to the VFD to control the flow rate of the fan. This component will save on utility costs and will protect the duct system in the event all dampers in the system were to be closed off at the same time.

6. Building penetrations shall be made in a workmanlike manner and shall be flashed and sealed to protect against the weather.
7. All electrical connections shall be made by a licensed electrician, and shall be part of the scope of this project. All electrical work shall be per NEC code. All 120 volt and higher shall be in metal conduit. Low voltage controls (24volt) may be run in "SO" cord or plenum rated cable.
8. A safety disconnecting means must be within sight of the blower for servicing and safety reasons (NEC code ref. 430-102 (b)). Safety disconnect shall be a Square D or equal, non-fusible, NEMA 3R rated for wet locations and shall be mounted adjacent to the blower. Safety disconnect shall be capable of being locked in the off and on position to follow lockout, tag out procedures.
9. Flexible wiring shall be in a UL listed liquid tight flexible metallic conduit (Sealtite). Conduit will encase the load wires and ground wire from the safety disconnect switch to the blower motor. Conduit length not to exceed (4) feet from disconnect to blower motor. The appropriate listed terminal fittings shall be used. (NEC code ref.351-7).

PART 3: EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances, service-utility connections, and other conditions affecting installation and performance of equipment. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install system level and plumb, and in accord with manufacturer's written instructions, original design and referenced standards.

3.03 ADJUSTING

- A. Adjust system for proper operation. Replace any parts that prevent the system from operating properly.
- B. Entire system shall be tested and the airflow shall be balanced to provide the designed airflow at each extraction point. A certified test report shall be submitted to the architect, engineer, and the owner before final acceptance may be made.
- C. The system shall be commissioned by a factory trained technician, and full complete start-up shall be included as a part of this contract. A final report shall be provided by the manufacturer indicating that the system has been started and commissioned for the owner's use. Final payment will be withheld until this report has been received by the owner and architect.

3.04 CLEANING

- A. Remove all debris caused by installation of the system. Clean all exposed surfaces to as fabricated condition and appearance.

3.05 DEMONSTRATION

- A. Provide the end user a minimum of two hours of hands-on demonstration and operation of the system.

3.06 PROTECTION

- A. Provide protection of the completed installation until completion of the project. Repair any damage, at no additional cost to owner.

3.07 WARRANTY

- A. Provide a written warrantee for a period of one year from date of shipment for all components.
- B. Contractor to provide a warrantee period of one year from date of substantial completion and acceptance.